

25 November 1988

MEMORANDUM FOR: Chief, Safety Division, OMS

FROM:

Acting Chief, Facilities Management Group, OL

SUBJECT: Use of Polyplastic Pipe

1. I request that your office review the attached documents provided to us by Ogden Allied. From our perspective, the use of polyplastic pipe in lieu of glass pipe has obvious economic and safety advantages. If polyplastic pipe is acceptable to your office, we propose that it be used for repairs of the existing glass pipe system and for future use where chemical drains are required. The Office of Technical Services has reviewed the attached documents and has no objections to the use of polyplastic pipe.

2. Please advise us of your decision in this matter.

Attachments:

- A. Letter From OTS
- B. Allied Letter with Attachements

CONFIDENTIAL

SUBJECT: Use of Polyplastic Pipe

25X1

OL/FMG/HD (25 November 1988)

Distribution:

Orig - Addressee w/attachments

1 - D/L Reader w/attachments

1 - FMG Chrono w/attachments

1 - FMG Official w/attachments

1 - HD Chrono w/attachments

OTS-632/88
17 November 1988

ATTACHMENT
A

MEMORANDUM FOR: Chief, Headquarters Division, FMG/OL

FROM:

[Redacted]

Chief, OTS Logistics

SUBJECT:

Use of Polyplastic Pipe

[Redacted]

REFERENCE:

Memo fm C/HD/FMD/OL, dtd 2 Nov 88, same subject

[Redacted]

1. This office has no objections to the use of polyplastic pipe for handling and disposal of OTS chemical wastes, provided it meets the specifications imposed by the OMS Safety Division and the standards established by OSHA and local governments. We have previously identified the chemicals used in OTS to the Safety Division. I recommend that your office seek the Safety Division's concurrence in this matter.

[Redacted]

2. If we can be of further assistance, please do not hesitate to contact us.

[Redacted]

[Redacted]

ADMINISTRATIVE INTERNAL USE ONLY

OGDEN ALLIED SERVICES

INTEROFFICE CORRESPONDENCE


Date: 1 November 1988

To: C/HD/FMG/OL

Office: Headquarters, CIA

From: 

Office: Ogden Allied, HQ-CIA

SUBJECT: NHB GLASS PIPE 

1. Since taking over the laboratory areas in New Headquarters Building, we have had several calls on pipe leaks under the floors.

2. The leaks have been caused by broken glass drainage pipes. This is due to either imperfections in the pipe, or faulty installation.

3. We have found glass pipe to be extremely expensive. It is also difficult to store, transport and handle without considerable damage or breakage.

4. We have located an alternative to glass pipe. The pipe is a plastic chemical resistant pipe, by Enfield (see attachment "A").

5. The Enfield pipe is available at a local distributor at about 50% of the cost of glass pipe (see attachment "B").

6. With this type of pipe, we would eliminate the breakage problem completely.

7. The Enfield pipe is also compatible with the glass pipe. We are recommending that if this pipe meets your chemical requirements, that it be used for repairs or replacement instead of the glass pipe.

8. We will be waiting on your direction in this matter.

HL/dh

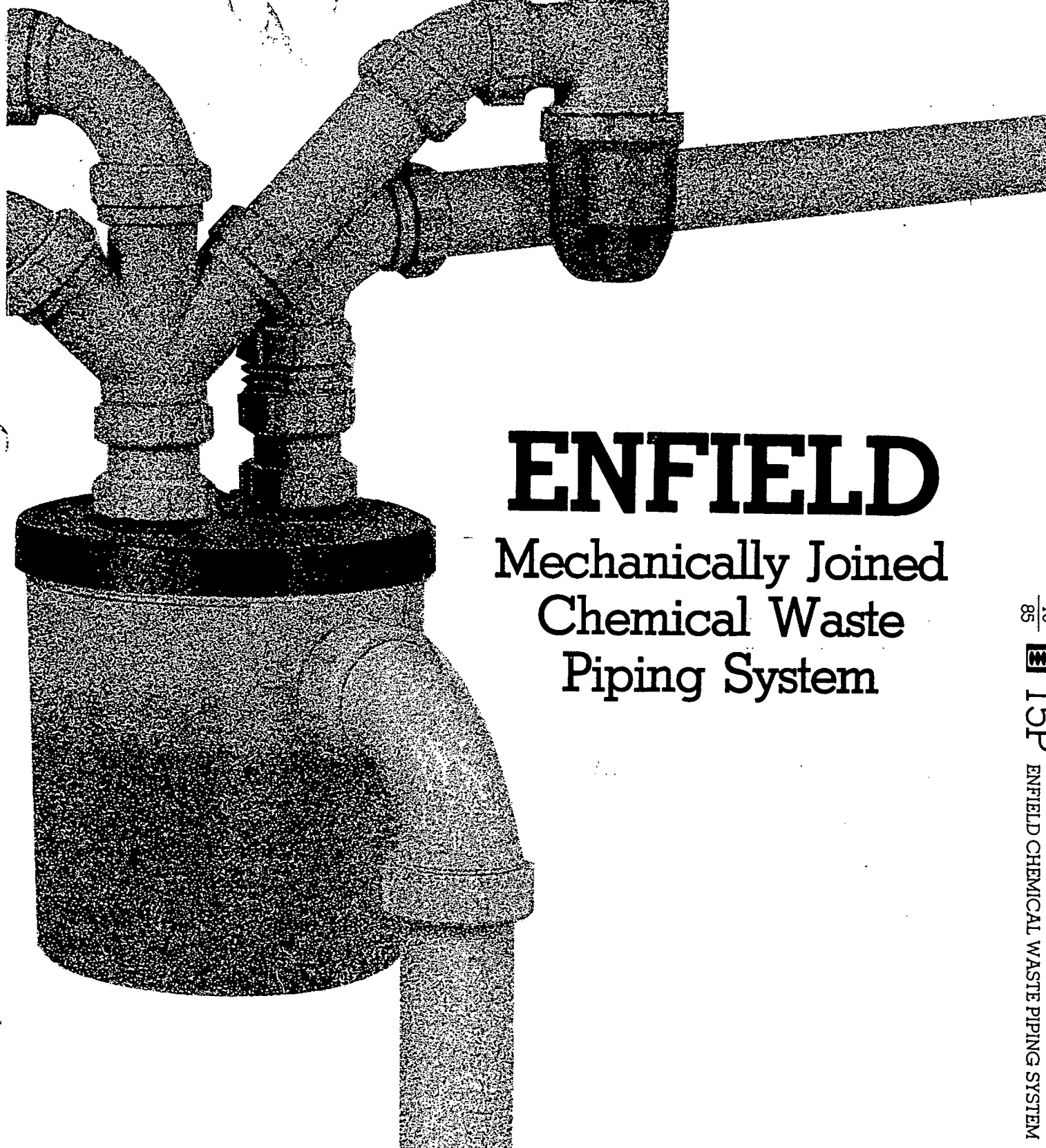
Enclosure

ATTACHMENT
B

REVISED 1985

ENFIELD CHEMICAL WASTE PIPING SYSTEM

10 15P 85



ENFIELD

Mechanically Joined Chemical Waste Piping System

10 15P 85 ENFIELD CHEMICAL WASTE PIPING SYSTEM

MECHANICALLY JOINED CHEMICAL WASTE PIPING SYSTEM.*

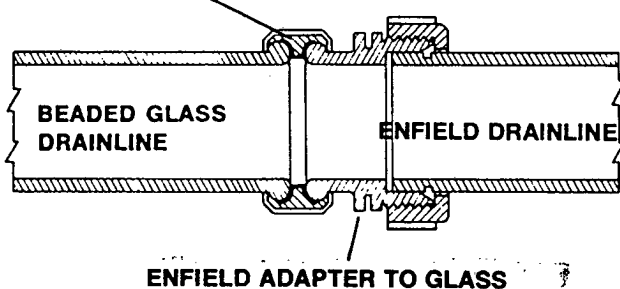
*WORLD-WIDE PATENTS AND PATENTS PENDING.

ADAPTING TO OTHER DRAINLINE MATERIALS

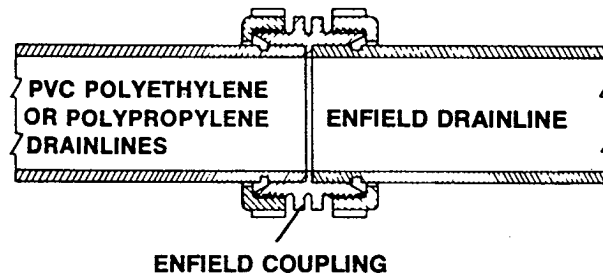
The methods depicted below are recommended only as means of adapting. Enfield components are dimensionally matched to assure installation success. Do not install a system of mixed brands without our express written recommendations.

Adapting Enfield drainline to glass

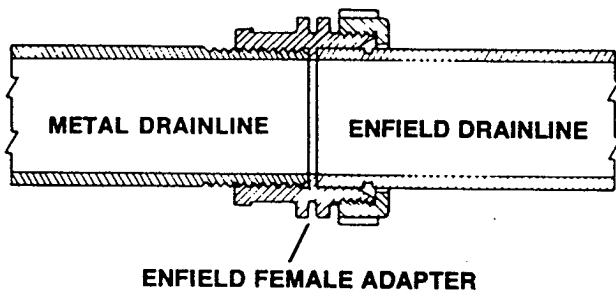
Use Enfield adapter to Glass and compression coupling available from glass drainline vendor.

COMPRESSION COUPLING**Adapting Enfield drainline to other plastic materials**

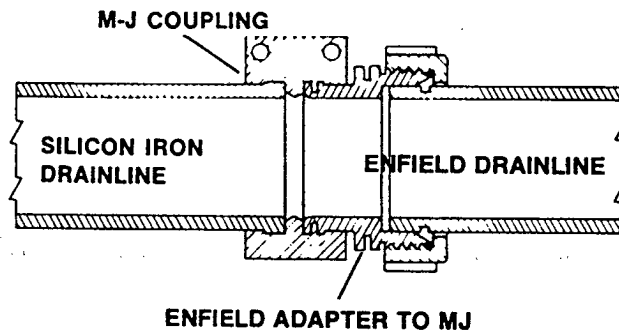
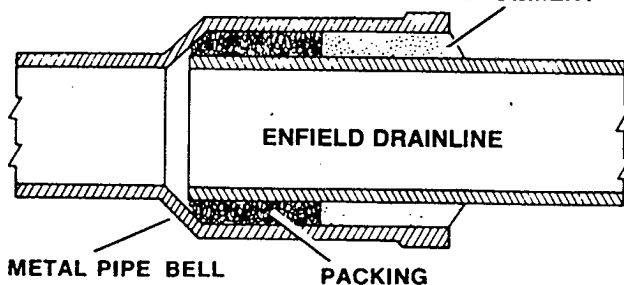
Use Enfield Coupling. Other plastic pipes can be grooved exactly like Enfield pipe.

**Adapting Enfield drainline to threaded metal pipe**

Use Enfield Female Adapter. Always use T.F.E. tape when making threaded connections.

**Adapting Enfield drainline to silicon iron pipe.**

Use Enfield Adapter to MJ and MJ Coupling available from silicon iron pipe manufacturer.

**POURED LEAD OR CAULKING CEMENT****CAULKED JOINT**

1. Roughen or score pipe end with suitable tool or coarse file to provide a "key".
2. Insert Enfield pipe to stop.
3. Pack hub half full with asbestos rope or acid resistant oakum.
4. Caulk with hot lead, lead wool or acid-proof cement.

CHEMICAL RESISTANCE DATA

The chemical resistance of the Enfield System is perfectly satisfactory for laboratory chemical waste drainage installations. This is due to the Enfield System's excellent resistance to chemical attack by a wide variety of chemicals and also to the nature of the normal laboratory waste

application. This is, the routine disposal of wide varieties of hot and cool chemicals accompanied by appropriate amounts of water for the purposes of dilution and flushing.

Starting below is an extensive list of chemicals which has been compiled through controlled

laboratory immersion testing and actual in service use, and proves the scope of the Enfield System's chemical resistance. All of these chemicals may be used as stipulated without adverse effect to the system. For non-laboratory waste applications contact Enfield for specific recommendations.

Acetic Acid, Glacial, 97%
Acetic Acid, 50%
Acetic Acid, 40%
Acetic Acid, 10%
Acetone, 100%
Acetophenone, 100%
Acriflavine, 2% Sol. in H ₂ O
Acrylic Emulsion
Aluminum Chloride
Aluminum Fluoride
Aluminum Sulphate
Alums, all types
Ammonia Gas, dry
Ammonia, Aqueous, 30%
Ammonium Carbonate, Sat.
Ammonium Chloride, Sat.
Ammonium Fluoride, 20%
Ammonium Hydroxide, 10%
Ammonium Metaphosphate, Sat.
Ammonium Nitrate, Sat.
Ammonium Persulphate, Sat.
Ammonium Sulphate, Sat.
Ammonium Sulphide, Sat.
Ammonium Thiocyanate, Sat.
Amyl Acetate, 100% *
Amyl Alcohol, 100% *
Amyl Chloride, 100% *
Aniline, 100% *
Anisole, 100% *
Antimony Chloride
Aqua Regia *
Barium Carbonate, Sat.
Barium Chloride, Sat.
Barium Hydroxide
Barium Sulphate, Sat.
Barium Sulphide, Sat.
Beer
Benzene, 100% *
Benzolc Acid
Benzyl Alcohol *
Bismuth Carbonate, Sat.

Borax
Boric Acid
Brine, Sat.
Bromine Liquid, 100% *
Bromine Water *
Butyl Acetate, 100% *
Butyl Alcohol, 100%
Calcium Carbonate, Sat.
Calcium Chlorate, Sat.
Calcium Chloride, 50%
Calcium Hydroxide
Calcium Hypochlorite Bleach, 20%
Calcium Nitrate
Calcium Phosphate, 50%
Calcium Sulphate
Calcium Sulphite
Carbon Dioxide, Dry
Carbon Dioxide, Wet
Carbon Disulphide, 100% *
Carbon Monoxide
Carbon Tetrachloride, 100% *
Carbonic Acid
Cetyl Alcohol, 100%
Chlorine, Wet/Dry *
Chlorobenzene, 100% *
Chloroform, 100% *
Chlorosulphonic Acid, 100% *
Chrono Alum.
Chromic/Sulphuric Acid *
Chromic Acid, 80%
Chromic Acid, 50%
Chromic Acid, 10%
Cider
Citric Acid, 10%
Copper Chloride, Sat.
Copper Cyanide, Sat.
Copper Nitrate, Sat.
Copper Fluoride, Sat.
Copper Sulphate, Sat.
Cottonseed Oil
Cuprous Chloride, Sat.

Cyclohexanol, 100% *
Cyclohexanone, 100%
Decalin, 100% *
Detergents, 2%
Developers (Photographic)
Dibutyl Phthalate, 100% *
Dichloroethylene, 100%
Diethanolamine, 100%
Di-iso-octylphthalate, 100%
Emulsifiers
Ethyl Acetate, 100% *
Ethyl Alcohol, 96%
Ethylene Glycol
Ethanolamine, 100%
Ethyl Ether, 100% *
Ethyl Chloride, 100% *
Ethylene Dichloride, 100% *
Fatty Acids (Ca, 100%)
Ferric Chloride, Sat.
Ferric Nitrate, Sat.
Ferric Sulphate, Sat.
Ferrous Chloride, Sat.
Ferrous Sulphate, Sat.
Fluosillicic Acid
Formaldehyde, 40%
Formic Acid, 100%
Formic Acid, 10%
Fructose
Fruit Juices
Gasoline, 100% *
Gear Box Oil, 100%
Gelatine
Glucose, 20%
Glycerine, 100%
Glycol
Hydrobromic Acid, 50%
Hydrochloric Acid, 30% *
Hydrochloric Acid, 20%
Hydrochloric Acid, 10%
Hydrochloric Acid, 2%
50-50 HCL-HNO ₃ *

Hydrofluoric Acid, 60%
 Hydrofluoric Acid, 40%
 Hydrogen Peroxide, 30%
 Hydrogen Peroxide, 3%
 Hydrogen Chloride Gas, Dry 100%
 Hydrogen Sulphide
 Hydroquinone
 Inks
 Iodine Tincture
 Isopropyl Alcohol, 100%
 Iso-octane, 100%*
 Keytones
 Lactic Acid, 20%
 Lanolin, 100%
 Lead Acetate, Sat.
 Linseed Oil, 100%*
 Lubricating Oil, 100%*
 Magenta Dye (Aq. Sol.), 2%
 Magnesium Carbonate, Sat.
 Magnesium Chloride, Sat.
 Magnesium Hydroxide, Sat.
 Magnesium Nitrate, Sat.
 Magnesium Sulphate, Sat.
 Magnesium Sulphite, Sat.
 Meat Juices
 Mercuric Chloride, 40%
 Mercuric Cyanide, Sat.
 Mercury, 100%
 Mercurous Nitrate, Sat.
 Methyl Ethyl Ketone, 100%*
 Methyl Alcohol, 100%
 Methylene Chloride, 100%*
 Milk and its products
 Mineral Oil, 100%*
 Molasses, 100%
 Motor Oil, 100%
 Napthalene, 100%*
 Nickel Chloride, Sat.
 Nickel Nitrate, Sat.
 Nickel Sulphate, Sat.
 Nitric Acid, Fuming*
 Nitric Acid, 70%*
 Nitric Acid, 60%*
 Nitric Acid, 30%
 Nitric Acid, 10%
 50-50 HNO₃-HCL*
 50-50 HNO₃-H₂SO₄*
 Nitrobenzene, 100%*
 Oleic Acid*
 Olive Oil, 100%
 Oxalic Acid, Aqueous, 50%
 Paraffin, 100%*
 Paraffin Wax, 100%

Phenol, 100%*
 Phosphoric Acid, 90%
 Plating Solutions Brass
 Plating Solutions Cadmium
 Plating Solutions Chromium
 Plating Solutions Copper
 Plating Solutions Gold
 Plating Solutions Indium
 Plating Solutions Lead
 Plating Solutions Nickel
 Plating Solutions Rhodium
 Plating Solutions Silver
 Plating Solutions Tin
 Plating Solutions Zinc
 Potassium Bicarbonate, Sat.
 Potassium Borate, 1%
 Potassium Bromate, 10%
 Potassium Bromide, Sat.
 Potassium Carbonate, Sat.
 Potassium Chlorate, Sat.
 Potassium Chromate, 40%
 Potassium Cyanide, Sat.
 Potassium Dichromate, 40%
 Potassium Ferri/Ferrocyanide
 Potassium Fluoride
 Potassium Hydroxide, 50%
 Potassium Hydroxide, 10%
 Potassium Nitrate, Sat.
 Potassium Perborate, Sat.
 Potassium Perchlorate, 10%
 Potassium Permanganate, 20%
 Potassium Sulphate
 Potassium Sulphide
 Potassium Sulphite
 Propyl Alcohol, 100%
 Pyridine, 100%
 Silicone Oil, 100%
 Soap Solution, conc.
 Sodium Acetate
 Sodium Bicarbonate, Sat.
 Sodium Bisulphate, Sat.
 Sodium Bisulphite, Sat.
 Sodium Borate
 Sodium Carbonate, Sat.
 Sodium Chlorate, Sat.
 Sodium Chloride, Sat.
 Sodium Chlorite, 20%
 Sodium Chlorite, 10%
 Sodium Chlorite, 5%
 Sodium Chlorite, 2%
 Sodium Cyanide, Sat.
 Sodium Dichromate, Sat.
 Sodium Ferricyanide, Sat.

Sodium Ferrocyanide, Sat.
 Sodium Fluoride, Sat.
 Sodium Hydroxide, 50%
 Sodium Hydroxide, 10%
 Sodium Hypochlorite, 20%*
 Sodium Nitrate
 Sodium Nitrite
 Sodium Silicate
 Sodium Sulphate, Sat.
 Sodium Sulphide, 25%
 Sodium Sulphite, Sat.
 Stannous Chloride, Sat.
 Stannic Chloride, Sat.
 Starch
 Sulphates of calcium and magnesium, Sat.
 Sulphites of Potassium and sodium, Sat.
 Sulphur
 Sulphuric Acid, 98%*
 Sulphuric Acid, 70%
 Sulphuric Acid, 50%
 Sulphuric Acid, 10%
 50-50 H₂SO₄-HNO₃*
 Sugars and Syrups
 Sulphamic Acid
 Tallow
 Tannic Acid, 10%
 Tanning Extracts
 Tartaric Acid
 Tetrahydrofuran, 100%*
 Tetralin, 100%*
 Toluene, 100%*
 Transformer Oil, 100%*
 Trichloroacetic Acid, 10%
 Trichloroethylene, 100%*
 Trisodium Phosphate
 Turpentine, 100%*
 Urea
 Urine
 Vaseline
 Vinegar
 Water, Distilled, Soft, Hard
 Whiskey
 White Paraffin, 100%
 White Spirit, 100%*
 Wines
 Xylene, 100%*
 Zinc Chloride, Sat.
 Zinc Oxide
 Zinc Sulphate, Sat.

* While it is not mandatory, Enfield recommends that all chemicals be thoroughly flushed when they are disposed of. It is essential, however, that those asterisked chemicals be accompanied by dilution when they are disposed of continuously at elevated temperatures.

GENERAL INFORMATION**SUPPORT SPACING**

Because of the natural rigidity of polypropylene and the fact that it does not soften, to any marked degree when subjected to hot liquids, continuous support beneath horizontal runs is unnecessary. Instead, pipe should be supported by pipe clips or clevis type hangers or clamps as follows:

Size	Horizontal Pipe	Vertical Pipe
1½"	4'	10'
2"	4½'	10'
3"	5'	10'
4"	6'	10'

Vertical piping should be supported at each floor by means of riser clamps.

THERMAL MOVEMENT

Flame retardant polypropylene's rate of expansion is .0456" per 10° F. change per 10' of pipe. This must be provided for when installing a Polypropylene chemical waste system, and is done by supporting the piping loosely and free from strain. Thus the system will "float" and is flexible enough to allow for thermal movement.

PHYSICAL PROPERTIES

Enfield's Polypropylene pipe meets the requirements of Type II 37206 material as described in ASTM D2146-69.

Property	Value	Method
Specific Gravity	1.20g/cc	D1505
Tensile Yield Strength @ 2"/min.	3,300 psi	D638
Flexural Modulus	225,000 psi	D790
Hardness, Shore D	76	D1706
Izod Impact, Notched	1.0' lbs./in.	D256
Coefficient of Linear Expansion	6 x 10 ⁻⁵ "/in./°F	D696
Heat Deflection Temperature @ 66 psi load	225°F	D648
Flammability	AVG. FLAME TIME 0 SECS. AVG. GLOW TIME 0 SECS. AVG. BURN TIME LESS THAN 5 SECS. AVG. EXTENT OF BURNING—13mm	D635
Water Absorption, 24 hrs.	.01%	D570

GUIDE SPECIFICATIONS FOR ENFIELD CHEMICAL WASTE**LONG FORM****A. GENERAL**

Acid resistant drain and vent lines, as shown on drawings, shall be of polypropylene as manufactured by Enfield Industrial Corp. Pipe and fittings to be Schedule 40 wall thickness. System to include pipe supplied in 10 ft. lengths, fittings and traps. It shall also include recommended adapters to connect to other piping material where applicable.

B. MATERIAL

Pipe shall be made from flame retardant polypropylene with maximum average flame time of zero seconds and maximum extent of burning of 13mm in accordance with ASTM D635. Fittings shall be made from flame retardant polypropylene with maximum average burn time of 80 seconds and maximum extent of burning of 20mm in accordance with ASTM D635.

C. JOINTS

Connections between polypropylene pipe and fittings shall be made by means of the Enfield Mechanical Joint; connections containing EVA components are prohibited.

Connections between polypropylene and other types of piping material shall be made with Enfield adapters according to manufacturer's recommendations.

D. INSTALLATION

Installation shall be in accordance with contract drawings, the manufacturer's recommendations, and the local plumbing code. Entire system shall be installed free of stress and in proper alignment without strain. Horizontal supports shall be split ring or clevis type hanger spaced in accordance with manufacturer's recommendations. Vertical supports shall be standard riser clamps at each floor.

E. TESTS

System shall be hydrostatically tested in accordance with the local plumbing code.

SHORT FORM

Acid resistant drain and vent piping shall be of flame retardant polypropylene. Pipe and fittings shall be Schedule 40 wall thickness, and shall be joined by the Enfield Mechanical Joint. Installation and testing shall be in accordance with contract drawings, the manufacturer's recommendations, and the local plumbing code.

ENFIELD INDUSTRIAL CORP

650A ANTHONY TRAIL • NORTHBROOK, IL 60062 • TELEX: 270581
SPECIALISTS IN CHEMICAL WASTE DRAINAGE & INDUSTRIAL PIPING SYSTEMS

OGDEN ALLIED SERVICES

Attachment B

KIMAX GLASS PIPE

(Quoted by
E.J. Dwyer Co.
Laurel, MD)

ENFIELD POLYPLASTIC PIPE

(Quoted by
Plastic Piping Systems
Columbia, MD)

Pipe	Quote	Quote
1-1/2"	\$ 5.68 per foot	\$ 2.46 per foot
2"	7.72 per foot	3.34 per foot
3"	10.50 per foot	6.03 per foot
4"	18.27 per foot	8.55 per foot

90° Ells

1-1/2"	\$17.81 each	\$ 8.16 each
2"	22.44 each	10.32 each
3"	36.69 each	20.56 each
4"	56.50 each	32.72 each